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Friedmann Treatment of Pulmonary Tuberculosis.—The Friedmann treatment was administered to 40 cases of chronic pulmonary tuberculosis, each being given a single injection. Nonspecific therapy was utilized at the same time. After 1 to 1½ years the results were identical, with or without specific treatment. No harmful effects were noted from the use of the treatment.—*Stand der Friedmannfrage und Erfahrungen mit dem Heilmittel bei Lungentuberkulose, R. Niemeyer, Beitr. z. Klin. d. Tuberk., September, 1923, lvi, 268.*—(*H. J. C.*)

New Vaccine of Defatted Bacilli for Tuberculosis.—The fats and lipoids of the tubercle bacillus are in some way related to the setting up of immunity to tuberculosis. If these substances be removed a better degree of immunity can be established. A saponin and lipolytic substance frees bacilli of their lipoids when it is added to liquid media on which the bacilli are growing, and renders them entirely non-acid-fast. Some strains resist this substance for a long time, others lose their acid-fastness promptly. Vaccine from saponin cultures (live bacilli) produces but scant lesion in rabbits and then only after enormous doses. The virulence of these bacilli is about one-one-thousandth of that of untreated bacilli of the same strain. Treatment with this substance (*A. O.*) has a high degree of protecting power against subsequent infection with virulent bacilli. The therapeutic use of *A. O.* is limited, and it should be administered only to persons in the early stages of the disease. Its main use is a prophylactic one.—*Ueber ein neues spezifisches Tuberkuloseschultzundheilmittel, R. Arima, K. Aoyama and J. Ohbawa, Deutsche med. Wchnschr., May 23, 1924, i, 666.*—(*H. S. W.*)

Antituberculosis Serotherapy in Man.—Only the inflammatory forms of tuberculosis respond well. To treat tissue destruction by administering serum is nonsense; hence one must determine the presence or absence of cavities. Five categories of patients are mentioned, as follows: (1) Fever of bacillary invasion. (2) Polyserositis. (3) Congestive pulmonary foci, hemoptoic or pneumonic. In all three of these types successful results with serum are the rule. (4) Tuberculosis with irregular exacerbations. Here success is rarely lasting. (5) Necrosing tuberculosis. Here the serum is useless or harmful.—*Les conditions de succès de la sêro-thérapie antituberuleuse chez l'homme A. Jousset, Meeting, Soc. Méd., d. Hôp. d. Paris, June 20, 1924, reported in Presse Méd., July 2, 1924, no. 53, 557.*—(*A. P.*)

Toenniessen's Tebeprotein in Treatment of Tuberculosis.—*Tebeprotin*, a term applied to a protein product obtained from the tubercle bacillus, is a chemical entity which can be readily made into solutions of varying and exact dosage. Used subcutaneously, it is less "toxic" than is O. T. It does not produce immunity in the uninfected animal in the sense of prophylaxis, for it is only through infection with the tubercle bacillus that immunity to the disease or to new implanatation of bacilli is established. But through focal reaction an existing infection can be influenced by introduction of dead antigenic material. This preparation acts on healthy tissue rather than on the focus of infection. It is administered as tuberculin and, beginning with doses of 0.0001 mgm., treatment is continued after increasing dosage has reached 0.2 mgm. Patients improve without further increase of dosage and may receive the 0.2 mgm. dose

for several years, although there may be fever after injection. Larger doses are not possible as tolerance of the body to this product is not like that to O. T. It can be used in pulmonary tuberculosis except in the late stages. Used in 81 cases for longer than three months the results were interesting. In one group, embracing patients with predominantly fibrotic and chronic lesions, improvement occurred without exception. However, treatment had to be continued for months or years. In a second group, embracing cases with active tuberculosis with intractable fever, treatment produced a loss of fever and marked improvement. With discontinuance of specific treatment there followed a return to the old condition, which failed to respond again after return to specific therapy. In some of these cases, however, the cessation of the fever cannot be attributed to the specific treatment only. In a group of severely sick persons results were not uniformly gratifying. No good follows treatment of tuberculous laryngitis with this agent.—*Die spezifische Erkennung und Behandlung der Tuberkulose mit einem aus Tuberkelbazillen gewonnenen Eiweisskörper (Tebeprotin), Toenniessen, Deutsche med. Wchnaschr., May 16, 23 & 30, 1924, i, 629, 665 & 708.*—(*H. S. W.*)

Shiga's Tuberculosis Vaccine.—The tuberculosis vaccine of Shiga is a serovaccine prepared from living avirulent tubercle bacilli, the bouillon-filtrate of these bacilli and a tuberculosis immune serum. Although the series tested is small (43 cases), it is believed that the vaccine is of value, since cases with unfavorable prognosis have improved under its use.—*Behandlungsversuche mit dem Tuberkulose-Vaccin Shiga, H. Heinemann, Beitr. z. Klin. d. Tuberk., June, 1923, lvi, 20.*—(*H. J. C.*)

Selection and Disposal of Patients for Sanatorium Treatment.—Sanatoria may be defined as closed establishments, specially designed for the treatment of pulmonary tuberculosis, so situated and managed to permit of effective treatment by physical agents (air, light, sun) with continuous medical care and supervision. Many so called sanatoria fail to fulfil these requirements and ought not to be considered as sanatoria. A sanatorium requires an energetic and competent resident physician and patients judiciously selected. The sanatoria for the wealthy can receive any patients they choose, and keep them indefinitely if they choose. Popular sanatoria, however, by reason of the social task assigned them, must use the beds at their disposal for the best interests of the community. In the first place such a sanatorium ought to be in liaison with social service and tuberuclosis dispensaries well organized and directed. Before the war the beds of popular sanatoria, although few, were often occupied by patients too gravely ill. The dispensaries are the best places in which to pick out and diagnose the tuberculous, and select cases suitable for sanatoria. Closed cases of doubtful activity should especially remain under their observation. It is important that the dispensary chiefs should not only be competent, but of firm enough character to resist solictation to send to sanatoria patients incapable of deriving substantial benefit. The sanatorium physician must take his responsibilities seriously and conform to the established rules of management. The first month at the sanatorium is often a period of observation, which, in doubtful cases, should be used to decide the probable prognosis of the case and suitability for further treatment. Beds should not be continuously occupied by patients difficult to care for and unlikely to be able to return to work at the expense of better selected cases. The popular sanatorium cannot undertake cures which may extend over a long period. There are also certain social reasons for refusing admission. Patients of very bad moral character or the victims of incurable infirmities are undesirable. Hospitals, of course, have to accept every indigent patient, including vagabonds and public prostitutes, but the case is different with sanatoria, for these individuals expose other patients to dangerous promiscuities and consequences, and their habits of existence introduce factors of lax dicipline, disorder and demoralization. Not only does their presence require more severe disciplinary measures than would otherwise be the case, but the ends of the cure are defeated when these social outcasts return to society. Habitual debauchery, drunkenness, vagabondage, idleness and permanent infirmities, making a patient incapable of work, should preclude admission to a sanatorium. Sanatorium candidates may be classified socially into three groups: (1) Subjects trained to particularly arduous or unsanitary work, and also those whose inaptitude to earn a living condemn them to poverty. (2) Ordinary workmen whose wage allows them to live without privations but requires sustained efforts. (3) Artisans, commercial and bureau employees, intellectual workers, business representatives and small merchants,—occupations less fatiguing, and compatible with some regulation of life without privation. It is well known that class (1) and (2) subjects relapse more easily than those of class (3). Another point of importance is

the uselessness of seeking to locate popular sanatoria in specially favored climates or at special altitudes. In most of France a suitable location can be found, and if the discipline and supervision are good, immediate and excellent results are obtainable in most properly selected cases. *Suitable sanatorium cases: 1:* Pulmonary or pleural tuberculosis giving signs of evolution or activity. *2:* Tendency to limitation of the lesions. *3:* Clinical signs of favorable evolutive tendency. *4:* Absence of medical or social contraindications. The quantity and quality of the lesions must both be considered. Every patient cannot be retained until cured because some require a very long time and others are never cured. It is the periods of active evolution that require treatment. Cases of merely suspected tuberculosis should not be admitted to sanatoria, but observed and followed by dispensaries. *Suitable dispensary cases: 1:* Patients with serofibrinous pleurisy, ephemeral bacillary bronchitis, tuberculous pulmonary congestion or pneumonia, and hemoptyses, or convalescent from these, should be treated. *2:* Patients with tuberculosis of slight extent and tendency to sclerosis in 80 per cent of cases receive great and lasting benefits in five to eight months, and may then resume work and be followed by the dispensary. *3:* Afebrile fibrocaseous stage I cases obtain marked benefit in 60 per cent of cases in six to twelve months. Stage II cases will require ten to fifteen months and only about half will be benefited. A few more extensively diseased patients may be admitted if other conditions are favorable, namely, good general condition, absence of fever, tachycardia or abundant sputum, good digestive function, absence of complications, especially intestinal, laryngeal, renal or articular. Patients with chronic extensive disease should be sent to suburban hospitals. The presence of bacillary sputum should not be required for admission, as many undoubtedly active manifest cases will not show bacilli. Patients with more than very slight fever ought not to be admitted, but should be kept in bed at home or in hospitals.—*Quels sont les tuberculeux qu'il faut admettre et conserver dans les sanatoria publics, M. G. Kuss, Rev. Belge d. l. Tuberc., May, 1924, no. 5, 164.*—(*A. P.*)

Sanatorium Treatment.—It is emphasized that sanatoria should be primarily for the treatment of the sick. Since we possess no adequate specific treatment the mainstay in treatment lies along general lines, and is most appropriately and with individualization carried out in the sanatorium. The discharge records of 5,362 cases from the Schröder Sanatorium in Schömberg and 2,360 from Saugman's private sanatorium in Denmark bespeak the value of a systematative sanatorium treatment, as also the results from other sanatoria. Overestimation of climatic action in tuberculosis is warned against. The proper selection of patients for the sanatorium is again emphasized. The aim should be to choose those that can derive benefit. The period of treatment necessary cannot be definitely outlined, since this depends upon the course and extent of the disease. The occupation of choice should be gardening and farming. Sanatoria for pulmonary diseases or for pulmonary tuberculosis should be replaced by sanatoria for tuberculosis where curable cases of tuberculosis of the upper air passages and the ear, lymph nodes, bones, and joints can be admitted. Additions for children should be incorporated in all sanatoria.—*Heilstätten und Tuberkulose Bekämpfung, G. Schröder, Ztschr. f. Tuberk., March, 1923, xxxvii, 413.*—(*H. J. C.*)

Tuberculosis Dispensaries and Preventoria.—The closest coöperation between the tuberculosis dispensaries and preventoria on the one hand, and the child welfare workers as well as school physicians on the other hand, is urged. Every possibility of bringing exposed children into the fresh air must be utilized. Through sports the hardening of the younger generation is urged.—*Die Kinderfürsorge in den Tuberkulosefürsorgestellen, R. Lennhoff, Ztschr. f. Tuberk., September, 1922, xxxvi, 575.*—(*H. J. C.*)

Remarks on Tuberculosis Dispensaries.—Without resources the existence of tuberculosis dispensaries and preventoriums cannot be continued. They are now more than ever the pivot of all tuberculosis control. Homes where tuberculosis has existed should be visited at least monthly and be given special attention every three months. Education of the families is important. Training courses for dispensary nurses are requisite. The main period of tuberculosis combat should be in childhood and not in adult life. Healthy people should be separated from those infected, and the infected in the hygienic sense should be made harmless. The infected but not yet ill patients should have their resistance increased to prevent illness. Certain forms of the disease can be prevented from progressing by the dispensaries.—*Bericht über die Entwicklung des Fürsorgestellenwesens, Kayserling, Ztschr. f. Tuberk., September, 1922, xxxvi, 560.*—(*H. J. C.*)

Training Colonies.—The training colony to-day has, as its special work, the training of tuberculous patients—usually ex-service men—in some particular occupation. At the end of a certain time, which varies in different places and with different cases, these men receive (or do not receive) a certificate of health and industry which is, from the purely administrative standpoint, supposed to be a passport to prosperity in life generally. In nine cases out of ten the training colonies take no further interest in the future of the ex-trainee. The statistics given by Bardswell show that it is only very rarely possible for a man on the completion of his training to find a situation in the outside market in the trade in which he has been taught. The man's physical condition may be excellent, but the entire work which the training colony has set out to do and which to a certain extent it does very well, breaks down at the most crucial point, because the training colony scheme *per se* has made no arrangements for the future of the man. There is far too great a tendency at present to regard after-care committees as charitable organizations, instituted for the purpose of bestowing temporary relief. They are very limited in assisting in the real economic solution of the patient's future. It is a generally accepted axiom that it is necessary for a large percentage of middle-stage cases of pulmonary tuberculosis to continue to spend the remainder of their lives in ideal hygienic surroundings, and for this it will be necessary also for them to change their occupations. It is the exception to find patients in the fortunate position that their ordinary occupation can be carried on without loss in money or in health. In any colony it is infinitely better for the future of the settlement to have one trade taught in the colony, a trade which can be carried out efficiently and for the products of which there is a constant demand, than to have a multiplicity of instructors teaching handicrafts which, however exquisite the products may appear to the eye, have little or no value, as a sound commercial or business proposition. A business committee,having as its function the development of the industrial side of a training colony and settlement scheme, would be a godsend to every sanatorium in this country. The after-care of the sanatorium patient is a problem of the first magnitude.—*Training Colonies and Village Settlements in the Treatment of Pulmonary Tuberculosis, J. B. McDougall, Lancet, June 28, 1924, ccvi, 1343.*—(*B. T. McM.*)

Training Colonies.—The farm colony, as it was originally called, was a natural evolution of the sanatorium. Its purpose was to serve those tuberculous persons whose disease had been almost completely arrested, but who were found to remain liable to relapse when they returned to their ordinary avocations. Under medical supervision these patients gradually approximated the conditions of the ordinary working man's daily existence. Because of unfavorable occupations some of the colonists were trained in new pursuits, and for them a definite and suitable post was found before discharge from the colony. A vocational training colony, to be successful, should provide a prolonged period of treatment and training; a first-rate organization for securing to the trainees a suitable occupation before leaving; and an equally first-rate business organization for marketing their products. Village settlements are not practical, because they provide for only a very limited number of tuberculous patients and the capital expenditure in each case is not less than 250,000 pounds.—*The Part Played by Training Colonies in the Treatment of Tuberculosis, F. N. R. Minzies, Lancet, July 12, 1924, ccvii, 98.*—(*B. T. McM.*)

Results of Treatment at Davos.—Davos, situated in an elevated valley among the mountains of the Canton of the Grisons at an altitude of from 5000 to 6000 feet above sea level, was the first place in the high Alps to be developed as a health resort, especially for those suffering from tuberculosis in all its forms. Turban's statistics covering a period of ten years showed that the results obtained by the combined effects of the Alpine climate and careful sanatorium treatment far surpassed any obtained otherwise. One-half of his patients were, according to the Turban-Gerhardt classification, in the second stage, and a quarter in each of the first and third stages. Turban claimed that 66.1 per cent of all these cases were restored in the sense of Brehmer's absolute or relative cure. Of these cases of arrest 99.1 per cent were cases of the first, 73.2 per cent of the second, and 23.6 per cent of the third stage of tuberculosis of the lungs.—*Characteristics of the High Alpine Climate and Cure at Davos, E. H. Neuman, Brit. J. Tuberc., January, 1924, xviii, 3.*—(*B. T. McM.*)

Climate of Arosa.—Arosa, being situated at a height of 7000 feet, offers all the chief properties of the high altitude climate—low barometric pressure, dryness and purity of air, low temperature, and large amount of sunshine. The best known physiological effects caused by the above mentioned meteorological conditions are augmentation of the red-blood corpuscles, the lymphocytes, and

the large mononuclear cells, diminution of the granular leucocytes and of the total amount of the leucocytes, and increase in the viscosity of the blood. On account of the diminution of the pressure of oxygen the respiration becomes slower and deeper, the circulation is improved, the blood pressure is not altered, as a rule, and the circumference of the chest is increased. The wealth of pine woods does much to regulate the temperature of the air. Arosa has very little wind. The following types of pulmonary tuberculosis are contraindicated for Arosa: Advanced cases with a permanent pulse rate of 130 and more, and persistent temperature of 101.5°F. and higher, extensive involvement of the larynx, kidneys and intestines, emphysema, noncompensated valvular lesions of the heart, marked arteriosclerosis, diabetes, gout, anemia and psychoneurosis. —*Characteristics of the High-Altitude Climate and Treatment at Arosa, O. Amrein, Brit. J. Tuberc., January, 1924, xviii, 14.*—(*B. T. McM.*)

Chest Exercises in Pulmonary Tuberculosis.—The life of the lung's cells is of the first importance in increasing the resistance to the disease. In maintaining the integrity of the cell, the unit of circulation is the controlling factor. Therefore, exercise directed to the circulation must always be in place. Exercise is any bodily activity that influences the circulation favorably. The freest and widest excursion of the chest is not only the basis of exercise, but is of itself exercise. A course of exercises has been devised to give the widest and most rhythmical play of the chest. In the last four years 400 tuberculous patients have been using these exercises with good results. Statistics are not given as figures in tuberculosis are like signboards at the crossroads; if they are rightly turned one may arrive at his (pre) destination. There are four groups of exercises. These are designed to secure very deep breathing. In all the movements the mouth is open. Much nonsense is directed against mouth-breathing. All really deep breathing is accomplished with open mouth. With respect to hemorrhages these exercises have been demonstrated to be curative and preventive. Half the patients had histories of hemoptyses. Several had rose-tinged sputum at the outset of treatment; but the behavior of the cases under these circumstances was entirely favorable. In other cases expected habitual hemorrhages were postponed. The treatment may be due to a greater use of the sound side in procuring aspiration. A flexible chest is the master key to health. Man is as old as his costal cartilages, rather than his arteries.—*The Active Use of the Chest in Pulmonary Tuberculosis, S. Delano, Boston M. & S. J., July 17, 1924, cxci, 101.*—(*B. T. McM.*)

Effect of Diet on Tuberculosis of Young Guinea Pigs.—As it is accepted that fat, and particularly a fat with a high biological value such as milk fat, is beneficial in the treatment of tuberculosis, a series of experiments was done to study this point. Young guinea pigs and halfgrown rabbits were inoculated after a preliminary feeding period and continued on their respective rations. The inoculation was with an unusual strain of tubercle bacilli, "a bovine culture virulent for guinea pigs but nonvirulent for rabbits." The following conclusions were arrived at: *1:* Addition of 40 cc. of whole milk to an inadequate ration caused a rapid growth followed by rapid loss in weight and death. *2:* Addition of 40 cc. of skimmed milk resulted in slower growth, less loss in weight, and longer survival. *3:* Animals dying on either ration presented at necropsy enlarged mesenteric lymph nodes, pigmentation and, in some cases, fatty degeneration of the liver. *4:* The addition of 80 cc. of whole milk resulted in normal growth and development. *5:* With the addition of 80 cc. of skimmed milk growth was slower than with the whole milk and the condition was sometimes normal and sometimes resembled that of the 40 cc. group. *6:* Addition of skimmed milk to an adequate ration increased the resistance to tuberculosis. *7:* Differences in food consumption on different rations make comparisons difficult, but it seemed probable that skimmed milk had a peculiarly beneficial effect in tuberculosis. *8:* Experiments with whole milk with inoculated animals were unsatisfactory because of poor consumption of food.—*Effect of Various Rations on Young Normal Guinea Pigs and on Young Guinea Pigs Inoculated with Tuberculosis, M. Davis, J. Metabolic Res., May–June, 1923, iii, 725.*—(*J. S. W.*)

Vitamine-B in Tuberculosis.—Foods have always played an important part in the treatment of tuberculosis, especially foods such as codliver oil, fresh fruit, etc., which are now known to contain accessory factors or vitamines. The precise value of vitamines in the treatment of tuberculosis is, therefore, a matter which merits investigation. Little experimental work has been done on this subject, but it would seem not improbable, since deficiency of vitamines A and B renders an animal more prone to infectious diseases, that both these accessory factors are concerned in the resistance of animal tissues to tuberculosis. An at-

tempt was made by the authors to determine the value of vitamine B in experimental tuberculosis. Male guinea pigs were inoculated with virulent human tubercle bacilli during the spring and summer months when supplies of green vegetables were plentiful. The source of vitamine-B utilized in the experiment was the commercial yeast preparation, *marmite*. In one series, four animals were used, two on ordinary diet and two having a daily allowance of 8 gm. of marmite added to the diet. All four animals were given a dose of 250,000 bacilli each. The two animals on marmite diet died of generalized tuberculosis on the 131st and 138th days after inoculation. The control animals without marmite varied more widely, one dying on the 112th day and the other on the 160th day after inoculation. In another series, five animals were used. The first received a daily amount of 8 gm. of marmite in addition to the ordinary diet but was not inoculated. This animal increased in weight and remained alive and well at the end of the experiment. The second was inoculated with 125,000 bacilli but not given marmite, and died of generalized tuberculosis on the 139th day after inoculation. The remaining three were given 8 gm. of marmite daily, and after a preliminary period of observation were also each injected with 125,000 bacilli. Two of these died of pneumococcic secondary infection on the 148th day after inoculation, while the third died of typical generalized tuberculosis on the 209th day after inoculation. *Conclusions:* For the purpose of drawing conclusions as to the value of excess of vitamine-B as a means of treating tuberculosis, these data are obviously too scanty, but are reported as a matter of record.—*Excess of Vitamin B in the Treatment of Experimental Tuberculosis, P. W. Bassett-Smith and S. R. Gloyne, Tubercle, June, 1924, v, 420.*—(*J. S. W.*)

Mental Care of Consumptives.—It is unwise to discourage the show of fears which pulmonary tuberculosis naturally arouses. When the patient complains he should never be told that it is without reason; that his symptoms are imaginary. By such means the physician may create symptoms, and he will surely fail to help the invalid to attain a rational attitude toward his disease. A patient should never be refused treatment, but should be allowed the comfort of believing that something is being done for him; he should also receive information as to how remedial measures may help him. The natural tendency toward childishness created by any sickness is excessive in many phthisical patients. With these reëducation of the will is often needed. Fears which have become obsessive, such as fear of hemoptysis, insomnia, cough, and certain articles of food, may require removal by psychotherapeutic means. The patient with pulmonary tuberculosis has particular need to be treated as an individual, and his mental care is often no less important than his physical care. Both institutional and home life have their special pitfalls as regards the patient's mental well-being, and the wise physician will discover and endeavor to protect the patient against them. To achieve this the physician must be a good listener; he must know his patients and use every effort to help them to adjust themselves to their surroundings. He should also assist his patients in the choice of an occupation, guarding them on one side from engaging in unsuitable work and on the other from an unnecessary career of invalidism.—*The Mental Phase of Pulmonary Tuberculosis, G. H. Crofton, Military Surgeon, 1924, liv, 708.*—(*E. C.*)

Prognostic Value of Various Laboratory Examinations in Pulmonary Tuberculosis.—Every physician who examines a patient for the first time ought to weigh all the clinical facts and laboratory findings to arrive at a diagnosis; he then adds his judgment of the case, and determines the prognosis, immediate, ultimate and vital. The conclusion is often uncertain, incomplete and inexact. Too often the clinic seeks a categorical reply from the laboratory. What, then, are the most early, certain and grave indications. A comprehensive study has been made to correlate the results of the various laboratory tests with one another and with the clinical findings. The following laboratory tests were studied: (1) morphology and number of bacilli in the sputum, (2) albumin reaction, (3) phagocytosis in the sputum, (4) cytology of the sputum, (5) Arneth's formula in the sputum, (6) Weiss's permanganate reaction of the urine, (7) sedimentation of the red-blood cells (Fahraeus), (8) complete blood formula, especially leucocytic, and (9) Arneth's formula of the blood. *Prognostic value of the number and morphology of tubercle bacilli in the sputum:* One encounters all forms of bacilli at times in varying proportions, and there is no constant relation to the clinical form of the disease. *Albumin reaction of the sputum:* The technique of Roger has been simplified and modified; potassium ferrocyanide is used to produce a ring, after previous acidification and filtration. The reaction is not specific for tuberculosis, being positive in the presence of an inflammatory exudate, whether due to ulceration or alveolitis. In pulmonary tuberculosis

it has been found that a positive reaction speaks in favor of activity, a negative one against it. The greater the degree of activity, as a rule, the greater the amount of albumin; it also increases with the extent of the lesion. The presence of tubercle bacilli is always accompanied by a positive reaction, and a sputum richly albuminous is usually also richly bacilliferous. The albumin reaction usually appears early, before bacilli become abundant. A reaction which becomes negative surpasses in prognostic value even the disappearance of bacilli. *Urinary reaction of Moriz Weiss (potassium permanganate):* This is a color reaction, golden yellow, when positive. It is somewhat similar in significance to Ehrlich's diazo reaction, which is positive in all grave affections profoundly altering metabolism, typhoid fever, malignant measles, influenza and pulmonary tuberculosis of a grave type. The Weiss reaction is also positive in pneumonia, cerebrospinal fever, and intense septicemia or toxemias. In bad cases of tuberculosis it is almost constant; in cases with exacerbations it is intermittently present. It is present in 52 per cent of nonbacillary cases and 95 per cent of the bacillary. It is indicative of toxemia due to active or extensive lesions. It is often positive when the diazo reaction is negative. When persistently positive, Weiss has shown that tuberculin treatment is contraindicated. The only treatment that has been shown to affect a persistent strongly positive reation is pneumothorax. *Sedimentation of red blood cells:* For this type a citrated blood mixture is used, allowed to settle in a specially marked sedimentation tube, and read at fixed intervals (1 part of 3.8 per cent sodium citrate and 4 of blood are used). Nontuberculous conditions which affect sedimentation are pregnancy, menstruation, acute infections, syphilis, nephritis, malignant tumors, and certain psychoses. In suspected or doubtful tuberculosis, a normal sedimentation excludes the presence of an active lesion. The tuberculous without sputum or with negative sputum are not apt to show marked deviation from normal sedimentation, whereas 82 per cent of positive-sputum cases show rapid sedimentation. A very rapid sedimentation is of unfavorable prognostic significance, although a trend toward normal under treatment improved the outlook. This return to normal values is very nicely illustrated in pneumothorax cases responding favorably. *Phagocytosis of tubercle bacilli in the sputum:* This is a normal phenomenon often seen. There is no relation between stage and activity of the disease and amount of phagocytosis, and it has no bearing on prognosis, being entirely of academic interest. *Morphology of the sputum:* The cellular elements may be divided into mononuclear and polynuclear. The latter generally predominate but not always, and the proportion of the two bears no relation to the course or prognosis. *Arneth's formula in the sputum:* This is extremely variable and also bears no relation to the clinical course or prognosis. *Leucocytic and Arneth formula in the blood:* The extent of the lesions is not indicated by the leucocytic formula. Exacerbations of activity, however, are often signalized by leucocytic increase. In cases of slight severity the lymphocytes are relatively abundant; in severe destructive disease polynucleosis is the rule. Improvement is accompanied by increase in lymphocytes; aggravation, by polynuclear increase. Tuberculosis, however, is too variable in its manifestations for any absolute laws to govern the blood picture. Regarding Arneth's formula, many authors concur in the view that a polynucleosis with a deviation toward the left is a bad prognostic sign. *Correlation between different laboratory tests:* Patients with a negative Weiss test have in 20 per cent of cases a normal sedimentation, while 62.5 per cent with a positive Weiss test have a strong sedimentation. A positive Weiss test appears then, generally, before sedimentation of the blood is greatly altered. Patients with a negative albumin reaction to the sputum never have unduly rapid sedimentation, but 78 per cent of those with a strong albumin reaction show sedimentation changes. Patients with normal sedimentation show, however, 71 per cent of albumin reactions; those with slight alteration, 88 per cent, and those with marked alteration, 100 per cent. The albumin reaction is present in 48 per cent of those with negative permanganate reactions of the urine, and 98 per cent of those with positive reactions. Patients with slightly increased sedimentation give 65 per cent positive permanganate reactions; those with much increased sedimentation, 92 per cent. When the albumin reaction is strongly positive, the permanganate reaction is positive in 95 per cent; when slightly positive, in 52 per cent; when negative, in 40 per cent. Thus, a negative albumin reaction does not exclude toxemia, but when the local lesion is intensely active its effect on the general state will be shown by the Weiss reaction.—*La valeur prognostique des examens de laboratoire dans la tuberculose pulmonaire, A. Delkaye, Rev. Belge d. l. tuberc., January, 1924, no. 1, l.*—(*A. P.*)

Survival Factors in Tuberculosis.—An analysis was made of the records of 49 cases known to have survived four years or

more following arrest of their disease in the years 1912–1917, in the endeavor to ascertain if there are any common factors that will enable us to draw conclusions of general value. To control these it was also necessary to analyze some hundreds of consecutive tuberculous cases at random. All of both groups had a positive sputum when they first came under observation. *Association with Family Tuberculosis:* Such a history existed in 36 per cent of males and 30 per cent of females among the surviving group, while among 50 male controls it existed in 22 per cent and among 50 female controls in 30 per cent. Out of all cases notified in six months in 1922 there was a positive family history recorded in 18 per cent. *Income Level:* Family circumstances were financially adequate in the great majority of those surviving. *Nature of Work:* The division was made into outdoor and indoor work, whether active and laborious or sedentary, in dusty or crowded conditions or not, etc. No very significant facts were deduced. In spite of the improvement in conditions obtained by patients after treatment, the largest proportion began and ended in dusty crowded indoor occupations. *Early Symptoms:* Hemorrhage was an initial symptom in 46 per cent of the men, but much less commonly among the women. Pleurisy as an initial symptom was rare. *Part of Lung Involved:* In 38 male cases one or both upper lobes were involved, in 25 the right alone, while there was no case confined to the left upper lobe alone. A similar condition was found in the female cases, there being only one instance of left upper-lobe involvement alone, and one of the left upper and lower. *Period of treatment:* Two-thirds of the men had two years' treatment before arrest, others more. Three-fifths of the women had five years' treatment or more. *Reaction to Treatment:* The results of the first six months' treatment gave valuable indications as to ultimate prognosis; the majority showed improvement in this period, with an average weight gain of 10.3 pounds for the men and 8.5 pounds for the women. Among 150 deaths in patients who survived on the average about two years after notification, the average gain in six months was about 3 pounds. *Other Features:* Younger fatherhood was a marked feature of the male group. Duration of illness was most often twelve months or more prior to notification. *Conclusions:* It appears certain that prognosis is better with apical than other lesions, and especially when it is confined to the right apex. That the ultimate prognosis depends upon length of time in institutions does not appear to be proved but that useful lengthening of life may be thus secured is undoubted.—*Survival Factors in Tuberculosis, D. P. Sutherland, Brit. J. Tuberc., April, 1924, xviii, 59.*—(*A. P.*)

Relation of Side Affected to Prognosis of Pulmonary Tuberculosis.—In 741 cases of tuberculosis it was found that among men the course of left-sided disease is about one-third shorter than right-sided. Among women the course of left-sided disease also appears to be shorter than right-sided. As a whole, without considering age and sex, the duration of left-sided disease is nearly one-third that of right-sided. In the mild cases the incidence of left-sided disease is less, the opposite being true for severe cases. Females with left lung disease have the shortest course, and men with right-sided disease the longest. The smaller diameter of the bronchial tree of the left lung, its division into two lobes and the left-sided location of the heart are significant determining factors. These findings agree with those obtained by Mark in 1919 on 500 cases.—*Statistischer Beitrag zur Beziehung zwischen der von Phthise befallenen Lungenseite und dem Krankheitsverlaufe, K. Aoyama, Ztschr. f. Tuberk., April, 1923,xxxviii, 22.*—(*H. J. C.*)

Increase of Eosinophiles in Sputum in Prognosis of Tuberculosis.—A numerical increase in the eosinophiles in the sputum indicates a good prognosis and bears a certain relationship to the destruction of the erythrocytes. *Disomear* in small amounts for a long period brought about an amelioration of certain symptoms and especially a remarkable increase of eosinophiles in the sputum. The drug tends to facilitate the natural processes of healing.—*Prognostic Meaning of the Increase of the Eosinophile Count in the Sputum of the Pulmonary Tuberculosis Patient and Its Relation with Therapeutic Results as Well as Therapeutic Value of Organic Arsenic Compound "Disomear," K. Kohgami, Kekkaku, July, 1923, i, no. 4, Abstracts from Japan Med. World, February, 1924, iv, 45.*—(*M. M.*)

Ohtani Test in Tuberculosis.—Ohtani's test, or the phagocytosis test, by using citrated blood plasma was found a useful method for determining the value of treatment, being of equal value with the Pirquet test.—*Ohtani's Test in Tuberculosis, C. Akimoto, Kekkaku, March, 1923, i, no. 1, Abstract from Japan Med. World, December 15, 1923, iii, 274.*—(*M. M.*)

Prevention of Tuberculosis.—The subject of the prevention of tuberculosis is a very large one and is also one difficult to write on, as the main facts are not known. The

decline in the tuberculosis death rate in the United States during the last twenty-five years has been truly remarkable. In 1900, for the registration states, this rate was 195 per 100,000 inhabitants: twenty-one years later for the same area it was 94. In the fifth year of the Framingham demonstration the tuberculosis death rate showed a reduction of 67 per cent over that of the decade before this experiment. The tuberculosis program is chiefly responsible for this reduction. The preventorium idea is based on the assumption that a good percentage of the cases of adult tuberculosis is due to the juvenile type of infection, which has been latent in childhood, and later has spread and caused the pulmonary type of disease in the adult. This extension is the cause of the greater part of adult tuberculosis. Fresh infection occurring during adult life is not so frequent an occurrence. The preventorium is planned to take children who are supposedly infected with tuberculosis and whose general physical condition and nutrition cannot be kept in a satisfactory state at home. By improving their physical condition it is hoped to lessen their liability to adult tuberculosis. In the Lakeside Preventorium at Hoxsie, Rhode Island, the first step in treatment is to make arrangements for any special procedures that are ordered, such as removal of tonsils and adenoids. The routine treatment is simple; the children have a diet of cereal, bread and butter, meat, vegetables, fruit and a quart of milk per day. There is a rest period of one hour or more after the midday meal. They are out of doors day and night in summer, and during the winter average six hours out of doors unless it is stormy. In summer the clothing consists of trunks or bloomers with shoulder straps and no sleeves. Thus the neck, arms, legs and shoulders are bare. During the winter the children wear underclothes, dresses or suits, stockings and shoes. They wear sweaters out of doors, if it is cold. There is no regular course of heliotherapy. Tuberculin is not used. The patients do very well; the average gain in weight is one-half pound per week per child. Pale and listless children become ruddy and active.—*The Prevention of Tuberculosis, W. P. Buffum, Boston M. and S. J., August 7, 1924, cxci, 249.*—(*B. T. McM.*)

Vaccination of Children against Tuberculosis.—The problem of tuberculosis resolves itself into the question of immunity. This preventable scourge can only be eradicated by some safe scientific method of active immunization. During the past fourteen years experiments were done in an attempt to produce active immunity in a series of rabbits and guinea pigs. Previous treatment with tuberculin resulted in no protection against the laboratory dose (0.5 mgm.) of virulent bacilli. On the other hand, animals previously treated with four weekly doses of living bacilli of attenuated cultures of fourteen year's growth, six months after being given the usual laboratory dose of virulent bacilli, were found to be very much less infected than the preceding ones. The attenuated cultures do not produce tuberculosis in experimental animals. In another series, animals which had received protective doses of attenuated human bacilli were given 0.5 mgm. of living virulent bovine bacilli and animals which had received bovine attenuated bacilli were given 0.5 mgm. of virulent human bacilli. At the end of six months the results were most encouraging, two of the animals showing no infection, but all the others being more or less positive. In all probability these animals would have recovered from this laboratory dose. In a final series five rabbits were given two injections of 0.01 mgm. of vaccine subcutaneously. The vaccine was prepared from the dead cultures of human tubercle bacilli which had been attenuated by continuous subculture for sixteen years. One month later these animals received 0.1 mgm. of a virulent culture of bovine bacilli. At the end of four months all control animals (also five) were dead, whereas the five animals which had received protective vaccine are alive to-day and in apparently good health. Encouraged by these results, 412 children varying in age from one and one-half to fourteen years were treated with two prophylactic doses of vaccine prepared from dead cultures of attenuated bovine bacilli. The injections were given at an interval of two weeks. No reactions were observed, and in no case has there been any untoward symptom. Up to the present time, no child has been known to have developed tuberculosis, but it will be many years before a final judgment can be given of its efficacy in all cases. *Conclusions;* 1. It appears to be possible to immunize animals against tuberculosis by means of a protective vaccine prepared from attenuated bacilli. 2. The duration of the immunity is not yet known. 3. It seems to be probable that we may be able to protect children against infection in the household.—*An Attempt to Vaccinate Children against Tuberculosis (A Preliminary Note), N. Raw, Brit. M. J., July 19, 1923, no. 3316, 103.*—(*J. S. W.*)

Protective Inoculation against Tuberculosis.—It is gradually becoming accepted that active immunity occurs in tuberculosis only through the presence of living tubercle

bacilli to which the body has responded with inflammatory reaction, that is, only in the presence of true tuberculous nodules. For the production of true tubercles, bacilli of definite virulence are necessary, and in the failure to use truly virulent bacilli lies the reason for the inconstant and unfavorable results of vaccination with living bacilli in the past. Lasting immunity to tuberculosis cannot be expected, for example, in cattle inoculated with human type tubercle bacilli, for the lesions produced heal too soon, and with their healing immunity disappears. To confer immunity upon cattle bovine bacilli must be used. The problem is naturally one of great difficulty, for the vaccinating virus must be virulent enough to cause tubercle, but not virulent enough to cause progressive tuberculosis. The authors inoculated 20 calves in the knee-fold with bovine tubercle bacilli, 10 with 1 mgm. and 10 with 20 mgm. Fourteen were slaughtered in the course of the next few months, and the definite development of tuberculosis was noted. The site of predilection for the localization of the bacilli was in the mesenteric lymph nodes, rather than in the lymph nodes regional to the site of the injection. The most significant finding was the latency of the lesions. The other 6 animals were tested for the development of immunity. Four were placed with 1 nontuberculous control calf in contact with a cow with open tuberculosis. Two, together with another nontuberculous control, were fed milk containing tubercle bacilli. The number of experimental animals was admittedly small, and the results were not striking. Neither control nor vaccinated animals of the first group became infected. The control of the milk-fed group developed a definite but not extensive tuberculosis of the mesenteric lymph nodes. The 2 vaccinated animals showed no tuberculosis which could be considered reinfection.—*Zum Problem der Tuberkulose. Schutzimpfung, Selter, Knauer and Geschke, München. med. Wchnschr., December 21, 1921, 1499.*—(*E. R. L.*)

Preventoria.—The term preventorium, should be used to designate a place where children may receive care when they can be proved to have an infection with the tubercle bacillus, but are without real disease symptoms, except possibly demonstrable glandular or bone trouble. If others are to be received they should show evidence of general weakness without demonstrable cause. Children with the juvenile type of pulmonary tuberculosis may be admitted. The need of such institutions is shown by the high incidence of tuberculosis among children. Slater found in rural Minnesota that 88 per cent of children that had been in contact with tuberculous people gave positive Pirquet reactions. Only 5 per cent were positive in noncontacts. Chadwick found that 15 per cent of the school children in Westfield, Mass., were 10 per cent under weight, and of these 8 per cent showed evidence of tuberculosis. Tuberculosis is really only incipient in childhood. When cough, expectoration and physical signs are present, the process is already beyond the incipient stage. Parents will learn that children gain much faster in the preventorium environment. With such knowledge many of the prejudices will be removed, and a larger measure of enthusiasm take its place. It is confidently to be expected that the preventoria, which now accommodate only a fraction of one per cent of the probable number of cases, will come to assume a much more important rôle, both from the standpoint of treatment and also as clearing houses of diagnosis and investigations.—*The Preventorium: Its Growth and Future, W. A. Griffin, Boston M. & S. J., July 17, 1924, cxci, 96.*—(*B. T. McM.*)

Preventive Inoculation for Bovine Tuberculosis.—In view of the fact that all previous vaccinations have not used tubercle bacilli as infectious agents, but have rather sought to immunize to the products given off by the dead bacillary bodies, Selter tested, for vaccination purposes, his *vital tuberculin* which is a combination of the living "unlocked" tubercle-bacillus protoplasm with a small number of weakened but still mildly virulent human tubercle bacilli. The virulence was reduced by growing successive cultivation of the bacilli in bouillon for 7 weeks. These bacilli were then ground in an agate mortar until the majority of the bodies were broken up and only a few remained intact. Vaccinated guinea pigs were immune, 20 to 30 days later, to ordinarily fatal reinfecting doses. In the preparation of a similar vaccine for cattle the following points were considered: (1) An immunity develops only after an infection with the same kind of bacilli, (2) the tubercle bacilli of primary infection probably remain alive in the body until the death of the individual; and (3) so long as there are living bacilli present in the body an immunity can exist. Bovine vital tuberculin was prepared like that used for human bacilli. The medium of Lockemann was used, and at 7-week intervals, 3 transfers were ground for tuberculin: 1 mgm. of the mass contained about one million tubercle bacilli, while in an equal amount of fresh culture there were at least one billion bacilli; that is, 99 per cent of the bacilli had been "unlocked" by the

grinding. This vaccine was used in guinea pigs which were divided into sets: (1) Vaccinated animals, not further inoculated, (2) vaccinated animals given a reinfecting dose of virulent bacilli 5 weeks later and (3) nonvaccinated animals infected with virulent bacilli. An intercurrent paratyphoid epidemic killed many of the animals, but those that escaped showed that the vaccine was protective to fatal reinfecting doses of virulent bacilli. It is believed that this method can be used for prophylactic purposes in calves, the aim being to produce a latent tuberculosis infection. Experiments on 20 calves have been initiated and will be reported later.—*Vorversuche für ein Rindertuberkulose-Schutzimpfungsverfahren, H. Selter and Knauer, Ztschr. f. Infektionskr., 1923, xxiv, 29.*—(*H. J. C.*)

Specific Prophylaxis against Tuberculosis.—The Ponndorf procedure is elaborated upon for the purpose of prophylactic vaccination. Preliminary immunization with *Tuberkulosehaut-impfstoff A*, a vaccine prepared from bacilli killed by ultraviolet light, is carried out until there results a positive anergy (about 4 vaccinations according to Ponndorf). This is followed by vaccination with a *Lymph C*, prepared from "intact, weakly virulent (weakened by light) bacilli, finely emulsified in their own tuberculin," and similar living bacilli, and finally a vaccination with *vaccine A* after the disappearance of the vaccine reaction.—*Problematische Gedanken zur Ponndorf-Haut-Impfung, W. Böhme, Beitr. z. Klin. d. Tuberk., December, 1922, liii, 410.*—(*H. J. C.*)

Prophylactic Inoculation against Tuberculosis in Guinea Pigs.—A bacillary emulsion kept in saline suspension in the refrigerator for more than one year produces inconstant results when inoculated into guinea pigs, but the guinea pigs which had been inoculated with the bacilli cultivated on saponin broth, to destroy their acid-fastness, became immunized. The guinea pigs which had been injected with tubercle bacilli all developed a general tuberculosis, while those previously receiving the saponin cultures remained unaffected.—*Studies on Tuberculous Immunization. VI. Report. Test on Prophylactic Inoculation. II. Experiment on Guinea Pig, K. Aoyama, Kekkaku June, 1923, i, no. 3, Abstract from Japan Med. World, February, 1924, iv, 45.*—(*M. M.*)

Disinfection of Sputum with Alkalysol and Parmetol.—Uhlenhuth's methods of disinfection of tuberculous excreta with alkalysol and parmetol were found satisfactory. In hospitals the dipping of sputum cups in the disinfecting fluid kills the bacilli. In dispensary practice success may not always be had.—*Die Desinfektion tuberkelbacillenhaltigen Auswurfs durch Alkalysol und Parmetol, B. Lange, Ztschr. f. Hyg., June, 1923, c, 42.*—(*H. J. C.*)

Natural Pneumothorax.—Ten cases are reported which occurred among 6,000 patients seen at the Sanatorium de la Hulpe, Waterloo, nine of them being in men. Except in the case of a very limited localized pocket, the diagnosis is relatively easy. The beginning is almost always sudden. The patient suddenly experiences a violent pain in the side and an intense dyspnea which immobilizes it completely. The temperature rises rapidly and the fever remains high for one to two weeks, then descending slowly and gradually. Examination soon after the accident discloses dilatation of the hemithorax, with marked tympany, and absent or feeble breath-sounds and vocal resonance. To these signs is commonly added a displacement of the heart toward the opposite side, as well as a lowering of the hepatic dulness in right sided cases. It must be noted that the onset may not be so abrupt; the pain in the side may be slight and the dyspnea less rapid and intense. This is the case when the pleuropulmonary fistula is small and allows only a little air at a time to escape. The elevation of temperature, however, is never absent. The development of an effusion which is almost constant complicates the picture, giving shifting dulness and a succussion splash. The immediate prognosis depends on the type of pleuropulmonary fistula, the condition of the opposite lung, the general condition, and the presence or absence of complications. The smaller the fistula, the better the chance of closure. A valvular pneumothorax may be rapidly fatal, especially if the opposite lung is much affected. The fatal cases have generally been in cachectic subjects or those with extensive bilateral disease. Regarding treatment, one must avoid intrapleural overpressure by aspiration or insertion of a cannula if necessary. The cough must be calmed and the heart sustained. In cases with effusion it may or may not be necessary to aspirate. If so, it may be advisable to replace with gas to prevent too sudden lung expansion. Spontaneous resorption often occurs. If pyopneumothorax develops it is treated by repeated aspiration and gas replacement. In the grave cases, drainage must be done and possibly thoracoplasty.—*A Propos de quelques cas de pneumothorax naturels, Delmoitie, Rev. Belge d. l. Tuberk., March, 1924, no. 3, 99.*—(*A. P.*)

Spontaneous Pneumothorax.—Report of a case of unilateral spontaneous pneumothorax, with dry pleurisy on the side opposite, with death.—*Spontanpneumothorax mit Exsudat auf der Kranken und Pleuritis sicca auf der Gegenseite, E. Körner, Deutsche med. Wchnschr., February 8, 1924, 1, 172.—(H. S. W.)*

Atelectasis as Sign of Bronchial Obstruction.—Atelectasis or lung collapse is of sufficiently frequent occurrence in connection with foreign bodies in the air passages to warrant the placing of some emphasis on this particular sign and the discussion of its diagnostic value. Atelectasis ensues when a bronchus or one of its branches is completely obstructed and when there is not sufficient exudate distal to the obstruction to fill the air spaces. In this case the air is absorbed and the lung collapses. Atelectasis does not ensue until such time as the obstruction to inspiration is complete. If the obstruction is only almost complete, then instead of atelectasis we will have overdistension with air beyond the obstruction. The appearance of the roentgenograms of these two conditions are diametrically opposite. Instead of density there is increased transparency on the affected side and the viscera, instead of being displaced toward the affected side are displaced away from it. There is evidence to show that this is true whether the obstruction is due to a foreign body within the bronchus or to compression of a bronchus by a localized mass, such as an enlarged lymph node or a localized new growth. In the case of obstruction by a foreign body, the shadows of the atelectatic lung will be more or less sharply defined by its pleural covering, and will be distributed along the line of the interlobar fissure. In cases of compression by enlarged lymph nodes or growth one has to consider the tumor mass also, and in these cases the lines will not necessarily be in the distribution of an interlobar fissure. The roentgenographic appearance of atelectasis is extreme density in the affected lung, the distribution following more or less the line of interlobar fissures, displacement of the heart and other mediastinal structures toward the affected side, and elevation of the diaphragm on the affected side.—*Atelectasis as a Roentgen-Ray Sign of Foreign Body in the Air Passages, W. F. Manges, Am. J. Roentgenol. & Rad. Ther., June, 1924, xi, 517.—(B. T. McM.)*

Massive Collapse of Lung.—This term is applied to total or partial collapse of the lung occurring particularly after operations and injuries. It occurs in two forms, the latent and the acute. In the latent form there are no symptoms, the condition being recognized by the physical signs and the typical roentgenogram. The acute form, however, has a very sudden onset and the first symptom is usually severe dyspnea, with very short and greatly accelerated respirations. Cough may be absent at first, but after a few days there is a productive cough with much sputum, varying from thin to mucopurulent, and in rare cases, rusty. The temperature is moderately elevated, 101° to 102°F. being the rule. The patient is cyanotic and in obvious respiratory distress, the affected side being retracted and moving but slightly. There is marked dulness over the involved area. In the beginning there are few or no râles; after the first few days râles become very profuse. The heart and mediastinal contents are markedly displaced to the affected side. On roentgen examination the involved portion of the lung shows a diminished radiance, is mottled in character and of about the same density as the heart shadow. The diaphragm on this side is high and motionless and the heart and trachea are markedly displaced to the affected side. The causes of massive collapse of the lung are diphtheritic paralysis of the diaphragm, gunshot wounds, injuries and abdominal operations. The collapse may not be on the same side as the injury or it may involve both sides. The mechanism of the collapse has not yet been agreed on. It is most likely that "bronchial obstruction and muscular immobility tend to bring about this condition, the one factor or the other predominating in the individual case, leading to alveolar absorption and massive collapse." The involved portion of the lung is blue or violet in color and sharply demarcated from the normal lung tissue. It is soft, tough and wet; it feels heavy, does not crepitate, and sinks when placed in water. Microscopically, the alveolar surfaces are closely approximated, the alveolar spaces being obliterated. Massive collapse is rarely fatal, the prognosis being good except in cases with very extensive bilateral collapse, or those in which severe sepsis sets in. The condition has been confused with pneumonia, cardiac disease and abscess of the lung. A case of massive collapse following an operation for appendicitis is reported with accompanying reproductions of roentgenograms.—*Massive Collapse of the Lungs, M. Ritvo, Amer. J. Roentgenol., April, 1924, xi, 336.—(J. S. W.)*

Massive Collpase of Lung.—Massive collapse is of fairly frequent occurrence in surgical clinics. Of 201 cases of lung complications in postoperative patients in the

Middlesex Hospital between the years 1906 and 1910, Bradshaw found 12 cases of massive collapse with one death. Bradford defines massive collapse as "an unusual condition in which the lung without the presence of any gross lesion such as bronchial obstruction, pleural effusion, etc., interfering with the free entry of air becomes airless to a greater or less degree, and, therefore, useless for respiratory purposes." Its cause is not entirely understood, but it is frequently accompanied by a partial or complete paralysis of the diaphragm on the affected side. Any injury or infection of the diaphragm, either directly or indirectly, may be accompanied by collapse. Massive collapse usually follows operations on the abdomen or thorax, and has never been reported as following operations on the mouth, head or neck. In the five cases composing this study all were postoperative. In one case a local anesthetic was used, and in this instance the collapse was complicated by pneumonia. In the discussion of this paper Manges suggested that the cause of the collapse might be an inflammatory process that involves primarily the terminal branches of the bronchi, the lumina of which are exceedingly narrow and may readily become occluded, so that the air may become absorbed and a diminution in the size of the lung and a rise in temperature occur.—*Massive Collapse of the Lung, G. L. Holmes, Am. J. Roentgenol. & Rad. Ther., June, 1924, xi, 507.—(B. T. McM.)*

Massive Collapse of Lung.—Excluding the congenital and pressure cases, atelectasis of whole lobes of the lung occurs only in the presence of diaphragmatic paralysis, under certain conditions in the presence of intrabronchial foreign bodies, and following certain injuries or operations not involving the lungs or pleura. Massive collapse has been seen in operative cases with general, local or even no anesthetic. The collapse may involve an entire lung, lobe or portion of one or more lobes on the same or even opposite side. The onset is usually sudden and occurs from a few hours to several days after the injury or operation. The signs that establish the diagnosis are dulness to flatness at the base of one lung associated with great displacement of the heart toward this side. The duration varies from a day to a week or ten days. Recovery is usually gradual, or it may be sudden and spectacular, all of the signs clearing up within a few hours. Even at the height of the process with large portions of the lung not functioning, the patients are not toxic and frequently do not know that there is anything wrong. The conditions which should be considered in the differential diagnosis are as follows: pneumonia, embolism, and infarction, acute pulmonary edema, pleural effusion, empyema, hemothorax, subphrenic abscess, and foreign body in the bronchus. The mechanism of the collapse is still subject to debate. There is considerable evidence to support Hirshbeck that the condition is determined by plugs of mucus in the bronchi, the recumbent position and protective muscular spasm resulting from the wound being important predisposing factors. After the collapse is established symptomatic and expectant treatment is indicated. All postoperative cases in which the diagnosis is doubtful should be studied by X-ray. Under conservative treatment the prognosis is good.—*Postoperative Massive Collapse of the Lungs, C. C. Lund and M. Ritvo, Boston M. & S. J., June 26, 1924, x, 1103.—(B. T. McM.)*

Pulmonary Collapse and Drowned Lung.—Four patients with so called postoperative massive collapse are reported. All were observed within a period of sixteen days and in all the operation was for some form of hernia. Ether was the anesthetic used. These cases belong to the type of massive pulmonary collapse characterized by sudden onset of such severity as to suggest embolism or acute pneumothorax. All had marked dyspnea and cyanosis, with sharp elevation of temperature, and a disproportionately high pulse and respiratory rate. The physical signs were those of limitation of expansion of the affected side, with markedly diminished or absent breath sounds at the base, and sometimes very distant tubular breathing toward the apex. The heart was always displaced *toward* the affected side. This is *the* physical sign which must be present to establish the diagnosis and it absolutely differentiates this condition from massive pneumonia, massive pleural effusion and acute pneumothorax. The disproportionate rise in pulse rate and respiration is easily accounted for on the basis of the sudden onset of the collapse with marked cardiac displacement and severe circulatory embarrassment. Roentgenograms showed an absolute density of the involved lung. The most likely assumption on which to explain the extraordinary roentgen-ray density, all things being considered, is that there is retension of secretions (fluid) within the collapsed lung, due to bronchial obstruction. Hence the term, "postoperasive pulmonary collapse and drowned lung," best describes these conditions. Massive collapse of the lung may occur in a variety of ways other than postoperatively but the author considers this a dissimilar condition due to a simple atelectasis without

bronchial obstruction and resulting drowned lung. It would appear that massive collapse and drowned lung are more common than the statistics of postoperative pulmonary complications would indicate. The recognition of these cases is of great importance, as their prognosis is vastly better than that of postoperative pneumonia, embolism, and acute pneumothorax, the conditions with which massive collapse and drowned lung are most frequently confused. Reproductions of roentgenograms accompany the article.—*Postoperative Massive Pulmonary Collapse and Drowned Lung, S. S. Leopold, Amer, J. M. Sc., March, 1924, clxii, 421.—(J. S. W.)*

Use of Lipoidol in Diagnosis of Bronchiectasis.—It is often extremely difficult to differentiate between suspected tuberculosis and bronchiectasis and to distinguish between tuberculous cavities of the lower lobes and hepatic and subphrenic abscess. By injecting *lipoidol* into the lungs before employing X-rays, however, a clear picture of the bronchi is obtained, bronchial dilatation of even slight degree is definitely shown, and localization of vague shadows becomes very much simplified. One of the authors has used lipoidol extensively in cases of children supposed to be suffering from pulmonary tuberculosis in whom the diagnosis was not confirmed by sputum examinations and complement-fixation tests. Lipoidol is a vegetable oil containing 40 per cent by weight of iodine. Cases of frank tuberculosis should not be submitted to this method, for the congestive action of iodine may produce harmful effects. The method of introducing lipoidol into the lungs is as follows: The patient is placed in the ordinary tracheotomy position on the X-ray table so that a photograph may be taken immediately after the administration of the lipoidol. The region of the cricothyroid space is rendered anesthetic and a fine trocar and cannula, similar to a small tracheotomy tube, is then passed strictly in the middle line into the trachea throughout the cricothyroid membrane. With the cannula in position, 5 cc. of novocaine solution is now injected into the trachea; the first few drops may provoke coughing, but this quickly disappears. Sterile lipoidol is now injected very slowly through the cannula at a rate of about 3 cc. a minute. About 10 cc. are necessary to inject the bronchi of a child, seven to fourteen years old. By turning the patient to one side or the other the bulk of the oil can be caused to flow to the suspected side. The cannula is now withdrawn and a radiograph of the chest is taken immediately in the horizontal position. The patient can now be screened and photographed in a vertical position. The patient suffers little or no inconvenience although symptoms of acute iodism have been reported in one case. The oil only gradually disappears from the bronchi. The radiographic appearance of bronchial dilatation, as seen, for example, after whooping cough, consists of small irregular fusiform shadows in connection with the medium-sized bronchi, while in the case of gross bronchial dilatations, the radiographs obtained after the injection of lipoidol are very striking. Several reproductions of radiographs accompany the article.—*The Use of Lipoidol in the Diagnosis of Bronchiectasis P. F. Armand-Delille and A. Moncrieff, Brit. M. J., July 5, 1924, no. 3314, 7.—(J. S. W.)*

Epidemic Pleurodynia.—A peculiar epidemic of an apparently infectious disease, characterized by fever, moderate prostration and sharp pain in the chest and abdomen, appeared in one of the New York City child asylums during July and August. It attacked 11 per cent of the inmates, all of them males; it was not fatal and ran its course without sequellae. Bacteriological studies of the nasopharynx revealed no etiological microörganism. Cases recurred occasionally. Cases were of two types, mild and severe. The onset was usually sudden with pain, which occurred in various places in the chest and abdomen and which did not remain localized. It resembled the pain of pleurisy. The temperature in some reached 105°F., with four days as the longest course of the fever. The physical findings were clear lungs, slight cyanosis and flushing, no parasites in the blood, and a slight leucopenia. Only an occasional nasopharyngitis was encountered. The spread seemed by direct contact from child to child and not through milk, water, food, etc.—*Epidemic Pleurodynia, D. Greene, Arch. Pediat., May, 1924, xli, 322.—(H. S. W.)*

Acute Lung Abscess Complicated by Massive Collapse of Lungs.—A report of a unique case of acute abscess of the lung complicated by massive collapse of the same lung is given. Two days before the onset of symptoms the patient took a swim. It is possible that while swimming he aspirated some water into the right lung which was responsible for an aspiration pneumonia, resulting nine days later in an abscess. On admission to the hospital the signs were those of massive collapse of the right lung. This was confirmed by X-ray. As the right lung became inflated the abscess cavity in the right lower lobe was revealed by roentgen examination. The cavity shrunk quickly

and in thirty-six days was reduced to a narrow slit.—*A Case of Acute Abscess of the Lung Complicated by Massive Collapse of the Lung, H. Elwyn, Boston M. & S. J., June 26, 1924, x, 1108.*—(*B. T. McM.*)

Treatment of Empyema.—The type of treatment most effective in saving life in acute empyema is the one most likely to prevent chronicity. The three most important principles are: (1) avoidance of open drainage during the acute stage, followed by free drainage at a suitable time, (2) irrigation of the cavity and (3) maintenance of good nutrition. During the war, the mortality dropped from more than 40 to less than 5 per cent after open drainage during acute pneumonia had been abandoned. The most convenient criterion of the time to institute open drainage is the character of the exudate, which should be moderately thick pus before open drainage is required. Much harm may be done by the drainage of serous exudates, not only in pyogenic infections but in tuberculosis. Drainage should be adequate; preferably by removal of a segment of the eighth or ninth rib in the posterior axillary line, though many make an initial trial of drainage through an intercostal space. The corresponding intercostal nerve and the one above and below are injected with 95 per cent alcohol to eliminate postoperative pain. Before opening the pleura sterile bone wax should be rubbed into the cut ends of the rib, in order to prevent the occurrence of an osteomyelitis. Dakin's solution is satisfactory for irrigation. The aim should be to produce a gain of 2 to 5 pounds a week in adult patients. Important hygienic measures are fresh air and heliotherapy; in winter time the quartz lamp may be used as a substitute for sunlight. An empyema is not healed till the cavity is both sterilized and obliterated; closure should be avoided till both these conditions are obtained. Aids to spontaneous obliteration are blowing exercises and general exercises; blowing into a spirometer has the advantage that it records the gain in vital capacity. Bronchial fistulae should not be closed artificially during acute suppuration; they may be useful in case of acute suppuration within the lung, and when there is no longer need of them they nearly always close spontaneously; attempts to close them artificially should not be made before several months. The greater number of cases of chronic empyema are preventable: there has been too early or too late or inadequate drainage; foreign bodies including sequestra from ribs, may be responsible. Cases may, however, become chronic because of unavoidable fibrosis and contraction of the lung; about 13 per cent of chronic cases were tuberculous. A careful search for tuberculosis should always be made; microscopic examination of a piece of thickened pleura will often contain bacilli. If conservative methods fail to produce healing, plastic methods should be used; the field will have become cleaner and they are consequently safer than at first. Expansion of the lung may be promoted by loosening adhesions and by decortication; ribs and thickened parietal pleura may be removed, causing the soft parts of the chest wall to meet the lungs; the cavity may be filled with living tissue, such as a muscle or a skin flap. The cavity should not be plugged with pastes.—*Principles Involved in the Treatment of Acute and Chronic Empyema, E. A. Graham, Surg. Gyn. & Obst., 1924, xxxviii, 466.*—(*E. C.*)

Chlorine in Respiratory Diseases.—Employees in plants producing or using chlorine have always believed themselves to be relatively free from respiratory diseases. During the great influenza epidemic at the chlorine plant at the Edgewood Arsenal it is stated that no cases were recorded among the operators, although every other organization at the arsenal had its full quota of cases. It was therefore determined to investigate the value of chlorine as a therapeutic agent. On exposing agar plate cultures of different bacteria to the gas it was found that the bacteria used were all killed by a concentration of 0.021 mgm. of chlorine per litre, if the time of exposure was sufficient. Such delicate microörganisms as the meningococcus and *M. catarrhalis* were killed after an hour's exposure to this concentration. Further experiments soon showed that this concentration could also be inhaled with safety. The effect of inhaled chlorine on the bacteria of the nasopharynx was then tested. It was found that when chlorine of a concentration of approximately 0.02 mgm. per litre was inhaled for an hour, the tonsillar, postnasal and pharyngeal surfaces were rendered practically sterile. The fact that chlorine acts more vigorously when inhaled than when allowed to act on agar plates is undoubtedly to be explained by the film of moisture present on the mucous surfaces. Chlorine is an active germicide in aqueous solutions in much weaker concentrations than when mixed with air. It is probable that concentrations of one to one million or more (an active germicide) may be easily reached in the fluids bathing the respiratory tract over which chlorine is passing continuously for one hour. In order to test the actual effect of inhalation of chlorine on patients, an air-tight chamber was constructed in which five or six people

could sit comfortably, and through which 42,000 litres of gas-air mixture could be passed per minute, with an even distribution in the chamber. In this work a concentration of approximately 0.015 mgm. per litre of chlorine was used. Most of the patients treated in the chamber received a single treatment of one hour. The results obtained with 547 patients were most gratifying. There seems to be little doubt that such chlorine treatment will completely abort a cold when taken sufficiently early, and in well developed cases it affords great relief. Acute bronchitis is practically always relieved. The cases of influenza and whooping cough treated were too few to afford a basis for positive statements but the authors believe that chlorine is distinctly curative in these diseases. A small portable apparatus has been designed for administering chlorine in an ordinary room. The results obtained by this apparatus in ordinary offices and living rooms compare very favorably with those obtained in the gassing chamber. The important factor is that a sufficient amount of chlorine should be inhaled over a sufficient length of time to produce a concentration of at least one to one million in the fluid lining the respiratory tract. Experience has shown that a concentration of 0.015 mgm. per litre for one hour is sufficient for this purpose.—*Chlorin as a Therapeutic Agent in Certain Respiratory Diseases, E. B. Vedder and H. P. Sawyer, J. Am. M. Ass., March 8, 1924, lxxxii, 764.—(J. S. W.)*

Pneumonokoniosis.—The action of dusts on the respiratory tract varies with their mass, physical state, form, structure, and chemical constitution and toxicity. In the present discussion mineral dusts especially are considered. Hess has calculated the amount of dust inhaled in twenty-four hours in various industries, and finds that cement factory workers take in 336 gm. a year; tobacco workers, 108 gm.; workers in iron foundries, 42 gm.; mills, 37.5 gm.; etc. According to Marfan, dusts penetrate by way of the upper respiratory tract, forcing natural barriers and often provoking inflammatory reactions, especially in mouth breathers. Seized by the leucocytes when they reach the alveoli they get to the lymphatics, which they infest as far as the regional nodes, which act as depots or barriers until, as a result of further irritation, they become annihilated. Animal experiments seem to show that simple pneumonokoniosis does not set up definite lesions until some intercurrent inflammation brings about pathological changes. Calmette's experiments on pneumonokoniosis of intestinal origin have been challenged by Kuss and others, who have shown that an animal can be rendered anthracotic by a few hours' exposure to a smoky atmosphere, when the digestive tract is tied off, and that the pulmonary involvement always exceeds the lymphatic. Arnold's researches have shown that in the animals used the dust particles pass between the alveolar epithelial cells into the network of lymphatic capillaries. In man dust is found in the perinfundibular connective tissue, also the peribronchial and perivascular tissues. In man, after continued dust inhalation, Arnold has found alterations of the bronchial mucosa and lung tissue. When dust does not completely obstruct the alveolar orifices, it may remain for a long time without indications of its presence; under other conditions, the wall about it thickens, and indurative foci or nodules develop, endoperialveolitis nodosa and endoperilymphangitis. The regional lymph node undergoes connective-tissue hyperplasia. The matter of radiodiagnosis deserves consideration, especially the interpretation of hilar shadows. For some, the hilar shadows are normally due to the bronchial tree, for others they are the result of vascular projection, for still others of combined bronchial and vascular origin, and, finally, for others of lymphatic origin. The left hilar shadow is especially variable. Delherin and Chaperon, from work with cadavers, reach these conclusions: The pulmonary arteries constitute almost the whole of normal hilar shadows and their ramifications may be followed. The bronchi show as clear bands, often visible, whose absence speaks for bronchial or lymphatic changes. To differentiate the arterial hilar shadows from pathological ones is very difficult. The lymph nodes normally are not visible, but active adenopathies modify the form and dimensions of the normal hilar shadows, obscure the vascular contour, and cause the bronchial bands to disappear. Often the richness of the vascular network suggests fine sclerosis, or little dilatations appear to be calcified nodules. In the thoracic radiograms here shown, relatively hard rays have been used, in order to avoid, as far as possible, these vascular arborizations and to distinguish dust infiltrations. According to Schaaf of Strasbourg, in pure siderosis the lung is peppered with innumerable small spots, distinguished from tubercles and carcinomatosis by their great density and clear contour. Likewise, in chalicosis and anthracosis we find disseminated punctiform shadows. The localization of preference is the upper-two-thirds, especially the lateral parts of the upper lobes; the hilar shadows are regularly enlarged and dense. On auscultation these cases generally show rude and

harsh respiration. Tuberculous invasion may complicate the picture. In almost all the subjects the apices have been clear, and the lymphatic hypertrophy has not been escessive. The lymph nodes often react relatively late, and respiratory symptoms usually appear late.—*Les pneumoconioses, Denet-Kravitz, Rev. Belge d. l. Tuberk., March, 1924, no. 3, 91.*—(*A. P.*)

Pneumonokoniosis with Autopsy Findings.—A case of pneumonokoniosis at first diagnosed as miliary tuberculosis is reported. A history of cough, fever, lassitude and expectoration of blood suggested tuberculosis. The roentgenogram showed a dense mottling throughout both lungs. The sputum was constantly negative. The true condition was later recognized and the patient advised not to continue work as a stonecutter. This advice was disregarded, all symptoms became worse and death resulted. Roentgenograms taken after death agreed very well with those taken during the course of the disease. The postmortem verified the diagnosis of pneumonokoniosis. Instructive reproductions of roentgenograms accompany the article.—*A Case of Pneumoconiosis with Autopsy Findings, J. H. Green, Amer. J. Roentgenol., April, 1924, xi, 358.*—(*J. S. W.*)

Lung Fibrosis from Asbestos Dust.—A fatal case of tuberculosis of the lung, accompanied by marked fibrosis, the latter apparently due to the inhalations of asbestos dust, is described. The patient, a woman aged 33, had worked in asbestos factories since the age of 13 although during the last five years her work had been intermittent. The postmortem examination showed the characteristic changes of advanced tuberculosis together with much fibrosis, one lung being practically airless, and the lung tissue being replaced by fibrous tissue. The nodes at the root of the lungs were found to be black on section. Microscopically, tubercle bacilli were found; also, in both the caseous areas and in the fibrotic parts were seen particles of mineral matter, apparently asbestos dust. Asbestos contains, among other compounds, calcium and magnesium silicates, and 40 per cent of silica. Asbestos dust, no matter from what part of the process it is collected, contains blackened particles in large amount. This is believed to be the first case reported in English medical literature in which the relationship between pulmonary fibrosis and asbestos dust is proved.—*Fibrosis of the Lungs Due to the Inhalation of Asbestos Dust, W. E. Cooke, Brit. M. J., July 26, 1924, no. 3317, 147.*—(*J. S. W.*)

Two-Stage Operation on Hydatid Lung Cysts.—De la Villéon agrees with Blanco Acevedo, of Montevideo, concerning the advantages of this type of operation, sometimes named after Lamas. Certainly an operative pneumothorax ought to be avoided, if possible. The patient is operated on in sitting posture, and the thorax opened by simple costal resection. If adhesions are present, the second stage is done at once; if, as is more common, there are none they must be created, the best method being by painting the parietal pleura several times with tincture of iodine, without opening it. The second stage is performed a week or ten days later, the cyst being loosened and evacuated. It is recommended that the second stage be performed with the patient under the fluoroscopic screen. If hemorrhage is met with, it is controlled by tamponage, removed after forty-eight hours.—*Kystes hydatiques du poumon, opération en deux temps, E. P. de la Villéon, Presse Méd., June 18, 1924, no. 49, p. 527.*—(*A. P.*)

Disease of Mediastinum.—Pathological conditions within the mediastinum may be inflammatory, traumatic, or new growths. Inflammatory processes may be either acute or chronic. It is impossible to detect simple acute mediastinitis unless the condition is suppurative. This condition is not uncommon, and is practically always secondary to some other disturbances within the body. Pus in the mediastinum is localized in the anterior, middle or posterior mediastinum or laterally. Rarely the entire mediastinum is involved in the process. Chronic mediastinitis is simply a low-grade inflammatory condition without production of pus. It may result from an acute suppurative condition, but generally results from extension of a pleuropericarditis, tuberculosis, syphilis or rheumatic condition. Traumatic lesions occur not infrequently. Foreign bodies may penetrate the thorax and lodge within the mediastinum. Such injuries in a large majority of cases result in abscess formation. A somewhat more serious result of trauma is the occurrence of mediastinal emphysema. This condition arises most commonly secondary to pulmonary diseases or whooping cough. Artificial pneumothorax may cause mediastinal emphysema. Tumors benign and malignant, account for the greatest number of pathological processes occurring within the mediastinum. The malignant growths are of much greater frequency and the incidence is greater among males, in the ratio of 2½ to 1. Sarcoma is more frequent than carcinoma. From the standpoint of symptomatology pathological changes within the mediastinum vary con-

siderably. The usual picture is that of marked dyspnea, cyanosis, puffy face and neck, with distended veins in the neck and over the thorax. A picture such as this represents an underlying far-advanced pathological process. There may be no symptoms however, pointing to the mediastinum as the site of the lesion. Pain, dyspnea, and cough are usually prominent symptoms. In physical examination the best evidence of mediastinal changes is brought out by percussion. Fluoroscopy and roentgen-ray examinations should be done as a routine. Should a mediastinal shadow be seen on fluoroscopy, before drawing a conclusion as to its location and character the esophagus should be viewed by means of an esophageal paste. Lesions involving the mediastinal lymph nodes usually appear as a bilateral mass at either hilum area. Bronchoscopy and esophagoscopy often give valuable aid. Laboratory examinations may be helpful.—*Disease of the Mediastinum and Its Contents, C. E. Hamilton, Am. J. M. Sc., June, 1924, clxvii, 888.—(B. T. McM.)*

Diagnosis of Primary Intrathoracic Tumors.—The pathology and means of recognizing these growths are discussed at some length. When a patient past middle life gives a history of progressive dyspnea or persistent pain in the region of the chest the possibility of lung tumor should be considered, especially in the absence of cardiovascular disease, and the patient should be submitted to careful physical and roentgen-ray examination. The latter is especially important, since it is rare to have negative roentgen-ray findings in any case so far advanced as to present symptoms. The roentgen shadows vary, but usually are unlike those of inflammatory conditions with which the diagnosis is often confused. The most frequent incorrect clinical diagnosis is tuberculosis. This error would occur in the interpretation of roentgenograms only in those cases in which a miliary carcinoma might be confused with miliary tuberculosis, or massive lobar cancer with caseous pneumonia. The respective variety of miliary carcinoma and of massive lobar tuberculosis would make these errors uncommon. In any case in which an infectious process is suspected, one would hardly suspect a coincident similarity in the physical signs and clinical history. The differential diagnosis of benign, malignant, and metastatic neoplasms is discussed. When small circular shadows of moderate density, larger than ordinary tubercles, and surrounded by fairly clear lung, are found in the roentgenogram, one must think of malignant tumor, especially if a couple of such nodules are found along the same branch, and the density of this branch is accentuated, as would result from a peribronchial lymph infiltration. The size, especially variation in size, and distribution usually help in the differential diagnosis from tuberculosis and other lesions. The usual characteristic mottled cloudiness of the parenchyma found in the ordinary case of pulmonary tuberculosis is of itself pathognomonic. It is, furthermore, often bilateral; primary lung cardinoma rarely so until the later stages. Then the side primarily involved would be apt to show massive dense areas due either to the tumor itself or the secondary changes due to occlusion of the bronchi. The differentiation of syphilis, Hodgkin's disease, and lymphosarcoma is also discussed. Eight case records with reproductions of roentgenograms are presented.—*The Diagnosis of Primary Intrathoracic Neoplasms, G. F. Thomas and H. L. Farmer, Am. J. Roentgenol. & Rad. Ther., May, 1924, xi, 391.—(J. B. A.)*

Lymphogranulomatosis.— Further observations are reported on the etiology of lymphogranulomatosis, and especially its relation to tuberculosis. Lymphogranulomatosis is a rare form of tuberculosis, in which tubercle bacilli can be found in every case (by serial inoculations). The bacillus is found only in the form of Much granules, is destroyed by antiformin and its pathogenicity is increased by lactic acid. For the development of lymphogranulomatosis there is necessary, besides the causative agent, a certain constitutional prerequisite disposition in which the lymphatic tissues react with increased resistance, so that the bacillus is partly injured.—*Weitere Untersuchungen über Lymphogranulomatose, E. Fraenkel and H. Much, Ztschr. f. Hyg., May, 1923, xcix, 391.—(H. J. C.)*

Pathological Changes in Hodgkin's Disease.—Hodgkin's disease is an affection of the hemolymphopoietic apparatus. Its histogenesis is determined by preliminary hyperplasia of lymphoid cells in various parts of the body; and by the discharge of mononuclear and multinuclear giant cells from the bone marrow, with or without eosinophiles and eosinophilic myelocytes, and then arrest by the hyperplastic lymphoid depots acting as filters. The fibroblastic reaction in the recipient tissues represents a mechanical process designed to support the excess of cells by which they are burdened. Hodgkin's disease is divisible into two groups: *1:* Those cases in which the changes are confined to the lymphoid structures, that is, the lymph nodes proper and the residual lymphoid foci. The latter

have a wide distribution and are present in practically all the tissues of the body. 2: Those cases which show, in addition, continuate infiltration and destruction of muscles, blood vessels, serous and mucous membranes, erosion of bone, and mechanical replacement of solid viscera. In the author's series of cases 10 belong to the first group and 4 to the second. Furthermore, it was noted that the disease displayed itself as an enlargement of the abdominal lymph nodes, or of the abdominal and thoracic nodes in combination, ten times more frequently than by enlargement of the lymph nodes of the neck. Any enlargement of the axillary and inguinal nodes is secondary to involvement of the thoracic or cervical nodes and to the abdomial nodes, respectively. These observations suggest that the provocative agent does not enter through the skin, but exclusively through mucous membranes, and probably only through that of the gastrointestinal tract, although the respiratory route cannot be excluded. In this series there was not a single case in which the peribronchial nodes could be implicated other than as an associated phenomenon. The brunt of the attack of Hodgkin's disease is borne by the lymph nodes of the abdomen, thorax, neck, axilla, and groin, and by the axillary lymphoid system, including the spleen, liver, etc. The vast array of lymphoid follicles which lies in the submucosa of the gastrointestinal, respiratory and urinary tracts nearly always escapes intact. Hodgkin's disease may reveal itself most prominently in organs other than the lymph nodes. Enlargement of the spleen or thymus or the liver may be the predominant feature, the associated lymph node involvement assuming a place of secondary importance. In 35 per cent of the cases the spleen was not enlarged, although palpable enlargement of this organ is commonly regarded as a constant accompaniment of Hodgkin's disease. The skeletal muscles may be extensively destroyed by tissue of the same sort as that in the lymph nodes. In this series such destructive changes are recorded in 3 cases. There is some evidence that in the reactions in the lymph nodes and bone-marrow there is a certain parallelism between Hodgkin's disease and chronic myelogenous leukemia. This suggests that the two diseases are fundamentally related and that they probably represent different quantitative responses to the same type of provocative agent. Whether Hodgkin's disease is an inflammatory or a neoplastic process remains to be determined. The fact that the histological composite tends to maintain its individuality throughout all changes of environment appears to constitute an argument in favor of its inflammatory nature. In all the 14 cases objective signs were apparent in the form of lymph-node enlargements in the neck, axilla or groin, emaciation, anemia, edema, changes in the skin, with or without the late appearance of such symptoms as cough and dyspnea, dependent on the pressure of enlarged lymph nodes within the thorax.—*The Clinical Significance of the Pathological Changes in Hodgkin's Disease, D. Symmers, Amer. J. M. Sc., February and March, 1924, clxvii, 157 and 313.*—(*J. S. W.*)

Hodgkin's Disease Cured by X-ray Treatment.—A case is reported of a patient who had the typical clinical and roentgenographic appearance of Hodgkin's disease. It disappeared apparently completely under the influence of the roentgen rays, a result which is common. The appearance of sacroiliac disease and a gluteal abscess afterwards, however, is not common, and the disappearance of these lesions under similar treatment is truly remarkable. No similar case was found in the literature. The bone disease may have been tuberculous or a part of the Hodgkin's disease.—*A Case of Hodgkin's Disease with Late Development of Sacroiliac Disease, Cured by Roentgen Treatment, G. E. Pfahler and C. P. O'Boyle, Am. J. Roentgenol. & Rad. Ther., May, 1924, xi, 406.*—(*J. B. A.*)

Blastomycosis in Industrial Accidents.—This disease exists in two forms: (1) a dermatitis, with involvement of the hands, arms, face, lower extremities and especially the eyelids, after which serious cicatricial deformities may ensue and (2) a systemic infection, beginning usually as a small red papule, probably at the site of some insignificant trauma or abrasion. This becomes crusted over and enlarges by growing at the periphery, which is raised and contains numerous miliary abscesses with a thin mucoid pus and many of the microorganisms. "The disease may never progress beyond this stage and may remain purely localized for years." The systemic infection may occur, however, without localized manifestations at the portal of entry. Such systemic infection has a general course and symptoms that are chronic and much like a pyogenic infection. The onset is usually gradual but often begins as a bronchopneumonia. The disease foci may be situated (besides in the skin) in the lungs, kidneys, adrenals, spleen, spine, brain, myocardium, bones and colon. In the lungs and bones it resembles tuberculosis. Amyloid disease may develop. Microorganisms are readily demonstrated by mix-

ing a drop of the pus with an equal amount of *liquor potassae* on a slide. The source of the infectious agent is not known, but it is probable that the agent contaminates various objects which produce the trauma rather than contaminating the skin. When taken early in the disease, potassium iodide seems to be curative. Physicians, especially those in industrial work, should be on the lookout for this disease.—*Blastomycosis as a Complication of Industrial Accidents, R. M. Carter, J. Industr. Hyg., April, 1924, v, 457.*—*(H. S. W.)*

Spontaneous Healing in Leprosy.—Many modern writers are apparently unaware of the tendency to spontaneous recovery in many cases. The length of time involved in the evolution of the disease has obscured this fact. Leprosy resembles tuberculosis in many respects. The acid-fastness of the bacilli is apparently due to some lipoid substance forming part of the bacilli and indirectly prevents the rapid formation of immune bodies. Neither leprosy nor tuberculosis is rapidly self-healing. Tubercle attacks chiefly vital organs, while leprosy confines itself almost entirely to the skin, mucous membrane and peripheral nerves. Thus, in tuberculosis, death is apt to supervene before sufficient immunity can be produced to induce self-healing; but in leprosy spontaneous recovery is frequent. The course of leprosy may be conveniently divided into three stages: (1) bacilli few, lesions limited, immunity low, (2) bacilli and lesions more numerous, immunity still low and (3) lesions widespread, but tending to resolve and disappear, immunity increased. In leprosy the multiplication of bacilli may proceed rapidly with but few toxic symptoms, or acute fever and toxemia may accompany lesions showing few bacilli. In the initial or quiescent phase the bacilli multiply without giving out toxins; in the second or reactionary phase toxins are set free and an inflammatory reaction of the tissues occurs; in the third phase of resolution these phenomena subside, leaving atrophic and fibrous changes in the tissues. Leprous lesions are constantly passing through these phases, and all may coexist in lesions of different age. In the reactionary phase bacilli are set free in the blood stream and may be carried as emboli to other parts. The object of treatment in leprosy is to cut short the course of the first and second state and to hasten resolution by causing moderate reactions. Attention in the first stage should be directed to the diagnosis and removal of anything lowering general resistance, the induction of immunity by the injection of antigens, and the destruction of lepra bacilli by the injection of such preparations as the esters of the fatty acids of hydnocarpus and chaulmoogra oils. In the second stage more stress must be laid on increasing resistance and violent reactions to injections avoided. In the third stage, large doses may be given and the reaction level lowered by administering orally potassium iodide, beginning with a small dose and working up to the limits of tolerance. When a case has passed through the third stage recurrence is unlikely. Many lepers who present marked trophic disturbances, nerve lesions and deformities fail to show lepra bacilli on examination. Under careful treatment however, little or no deformity may result. Criteria of cure or arrest are difficult to set, and under conditions of lowered resistance the disease may again become active, where it has not passed through its complete evolution. Unfortunately, no serological or other method yet exists of testing the specific immunity acquired.—*Leprosy, a Self-Healing Disease, E. Muir, Lancet, February 9, 1924, ccvi, 277.*—*(A. P.)*

Vaccine Treatment of Leprosy.—Emulsions, made by shaking cultures with ether in a shaking machine until the germs were dead, were administered to patients subcutaneously at four to six-day intervals in doses varying from 50 millions to 1000 millions bacilli. Local inflammatory reactions of varying degree occur—from an almost imperceptible reddening to violent inflammation with pus formation. These are probably allergic phenomena. In 8 of 19 cases so treated local improvement occurred; sensation returned in lesions of anaesthetic type, nodules about the nose shrank and general improvement was also noted.—*Beitrag zur Vakzinetherapie der Lepra, R. Kraus, Wien. klin. Wchnshr., November 15, 1923, xxxvi, 812.*—*(H. S. W.)*

Graduated Exercise in Treatment of Pulmonary Tuberculosis.—During the years 1920 to 1922 graduated exercise was employed as a form of treatment at King Edward VII Sanatorium in 624 cases of pulmonary tuberculosis. From the replies to inquiries sent out in 1924, 416, or 66.7 per cent, are well and at work or leading a normal life; 72, or 11.5 per cent, are not well; 13, or 2.1 per cent, are alive, no details; 91, or 14.6 per cent, are dead; and 32 are not reported. This leaves the total alive as 501, or 80.3 per cent. The fact that 78.1 per cent of group I cases and 53.7 per cent of group III cases are well emphasizes the importance of early diagnosis and treatment. The death-rate in group I (5.3 per cent)

compared with that in group III (26.3 per cent) has equal significance. These are picked cases, inasmuch as only those patients were allowed to attempt graduated exercises whose condition appeared to justify it, and only those are included whose condition and response enabled them to reach the higher grades. Evidence of activity excluded exercise. The grades of exercise progress from absolute rest in bed, or no exercise at all, to being in bed all day but not on absolute rest, to being up for increasing periods during the day, to taking an increasing amount of walking exercise, and only when the individual progress and condition permit to exercise in gardens and grounds and recreations involving exercise such as golf. All exercise is prescribed and carried out under close medical supervision.—*Graduated Exercise in Pulmonary Tuberculosis, H. O. Blanford, Lancet, September 27, 1924, ccvii, 646.*—(*B. T. McM.*)

Marine and Maritime Climates for Tuberculosis Patients.—The wide-spread belief in the baneful influence on the tuberculous of residence "by the sea" is in contrast with the renown of sea voyages from times of antiquity. Unfortunately, the sea climate, the maritime climate, and the climate of the littoral are often confused even by physicians and hygienists. Laennec writes, "The seacoast, especially in mild and temperate regions is the best place for the cure of phthisis." Aretaeus was convinced that navigation and residence on the seaboard in a mild climate were most effective means of opposing the disease. Hippocrates summed up the effects of climate on man as "The ensemble of usual atmospheric conditions characterizing a geographic situation in its relation to the inhabitating organisms." In this sense littorals and oceans vary greatly in their atmospheric conditions. The seacoast is a transition zone between sea and land. This maritime zone stretches several kilometres into the interior. *Temperature:* Theoretically, the annual variation in temperature depends on the afflux of solar heat, which in turn depends on the latitude. Actually, irregularities are strongly accentuated, due to distribution of sea and land, marine and atmospheric currents, altitude and vegetation. It is on the ocean that the annual variation of temperature is most regular and the diurnal variation least, because the humid layer above the sea absorbs a large proportion of solar heat. On the seacoast, the neighborhood of the sea tends to regularize land temperatures. During the day, the sun's rays penetrate the water deeply but, because of surface evaporation and the specific heat of water, they do not warm it as much as they do the land. Likewise, the mass of water is slow to cool for the same reason of specific heat. During the night, the upper layers of the water as they cool, are replaced by warmer water from below. Radiation of heat is less near the sea because of the larger amounts of water vapor in the atmosphere. While the ocean temperature varies, such variations are always slow and gradual, never abrupt, In a sea voyage the daily variation of temperature is rarely over 4° to 5°, and there is little cooling during the night. *Barometric pressure:* Variations of barometric pressure are least over the ocean, much less than on the littoral. *Humidity:* Hygrometric variations, more marked on the continents than on the sea, are maximum over the coastal regions, whence the frequency of fogs and mists. In the open sea, fog is rare, save in certain regions where water temperature lowers less quickly because of currents, than the atmospheric temperature; such is the case in the North Atlantic, especially at the Grand Banks of Newfoundland, where massive evaporation from the gulf-stream provokes fogs which render navigation difficult. *Regularity of ocean winds:* The autumnal succession of land and sea breezes is unknown on the open sea. These breezes are due to differences of temperature between sea and neighboring land. At night, on the coast, the wind blows from the land to the sea (land breeze often oppressive). During the day, conditions being reversed, there is a sea breeze which brings fresh air with the morning and is accompanied by a lowering of the temperature. Humidity increases with the sea breeze and diminishes with the land breeze. *Other characteristics:* The coastal or maritime climate, or zone of transition, differs markedly from the ocean or marine climate, especially in its inconstancy and variations. In general, atmospheric instability, with frequent and rapid variations in temperature and barometric pressure, and especially with high winds, is unfavorable for the tuberculous. Many tuberculosis patients come to Havre by steamship, in particular from America, especially South America. On none of these has the voyage seemed to have a bad effect. Often the temperature was lowered, and weight and appetite improved. If sea voyages are recommended, however, it is well that the course to be pursued should be carefully studied with a view to uniform atmospheric conditions, since our modern methods of ocean transportation are so much faster than in ancient times.—*La mer et les tuberculeux, L. Bernard and A. Loir, Presse Méd., July 16, 1924, no. 57, 597.*—(*A. P.*)

Climate in Pulmonary Tuberculosis.—Formerly climate was greatly over-rated as a curative agency in tuberculosis, and, failing of the results expected of it, it has now become unduly discounted. But the truth is to be found somewhere between these two extremes. Statistical studies as to the effect of climate on tuberculosis are usually worthless because they take no account of the "almost innumerable environmental" and personal factors involved. "Age, sex, marital status, exposure to infection, economic and mental status, occupation, housing conditions, nontuberculous complications, etc.," all may have a definite bearing on the course of the disease. Climate is a nonspecific remedy, and usually reacts on the disease only through its effect on the patient, and to no one characteristic of climate can its effects be attributed. Temperature range, purity and movement of air, humidity, storms, sunlight, altitude, are all integral parts of climate, and there cannot be an ideal climate for all cases. The treatment of tuberculosis must be individualized. "Climate cannot take the place of rest, proper food and care, but given these, climate is of great value and may be a determining factor."—*Climate in Pulmonary Tuberculosis, C. R. Howson, California and Western Med., October, 1924, xxii, 496.*—(*H. S. W.*)

After-Care of Tuberculosis Patients.—It is urged that some means be found to prevent the relapse which occurs so often when the ex-patient returns to his former environment and working conditions. After carefully considering data obtained from all available sources, the following conclusions have been arrived at: 1. Adequate treatment for both pulmonary and non-pulmonary tuberculous patients in sanatorium or hospital must precede employment in all cases, whether these be convalescent after active disease, quiescent, or chronic and incurable. 2. Employment is good, both physically and mentally, if the patient is fit for work and is under medical supervision. It must always be under medical supervision, and suitable work prescribed in regulated "doses." 3. The constant medical supervision of a complete care and after-care organization prevents the spread of tuberculosis and lessens the sickness rate of the disease. 4. A complete care and after-care scheme, affording training, and remunerative or partially remunerative employment is of economic value both to patient and to community, and lessens the financial burden to the nation. 5. Provision should be made by the State and by the local authority for training sections or "extensions" at sanatoria and hospitals for men, women and children, such patients to be selected as suitable cases. 6. Provision should be made by the State and by the local authority for training and treatment centres, and village settlements for temporary or permanent residents, under medical supervision. 7. Industrial and agricultural training and employment should be available in such centres. 8. Work-shops should be provided in such centres, and especially for urban districts, under medical supervision. 9. The State and local authority should organize such centres, and should finance such schemes and assist financially the patient and his family to exist during incapacity, partial or complete. 10. Voluntary agencies should assist in such schemes. 11. (a) Patients, while training in sanatoria or residential settlements, and after training during employment, should be housed at such centres as long as their physical state indicates the need. (b) Patients who have returned to their homes, and are employed either in municipal or approved workshops or allotments, or under ordinary industrial conditions, should receive the assistance, supervision and control of the State and local authority in housing when their home circumstances require this. The above conclusions are based on the opinions collected by means of a questionnaire; a study of publications issued by British, American, and Continental authorities and committees; and personal experiences gathered mainly in connection with professional work in connection with patients from the Devon and Cornwall Thberculosis Colony, England.—*The Care and After-Care of Tuberculous Persons, F. G. Bushnell, Brit. J. Tuberc., October, 1924, xviii, 149.*—(*J. B. A.*)

Calmette's Protective Inoculation against Tuberculous Infection.—The immunity conferred is not permanent and ceases in cows about the end of the second year; in rabbits and guinea pigs in about six months. It is quite analogous to that obtained against smallpox, anthrax, rabies, and typhoid fever. Also, it can be secured only in those animals free from any infection. In those already infected it induces only a hypersensitiveness to tuberculin. It is therefore applicable only to very young subjects, such as newborn infants, and to young calves. *Animal experiments:* These were carried out first on young cattle; then on apes. The department of the Seine-Inférieure and Seine-et-Oise were selected. The young animals were vaccinated in the first two weeks after birth and then exposed to natural contamination without any other change of conditions. Vaccination was renewed at the end of a year. From the

year 1921 to May, 1924, 127 young cattle were vaccinated. All have remained well. In December, 1923, three monkeys were taken, one being vaccinated, one infected, and one used as control. The control and the infected monkey died within a few months; the vaccinated one remains well. *Attempts to immunize young children:* Three injections were given within the first nine days of life, totaling 6 mgm. The first series treated comprised 217 infants, of whom 39 were lost sight of. Of the remaining 178, 9 died, the causes of death in the 3 that were known were nontuberculous. The development of the remaining 169 proceeded regularly. In 53 a cutaneous tuberculin test was done, and was negative in 88.7 per cent. Five infants with negative reacreactions were exposed to tuberculous individuals, and 3 of the 6 with positive reactions. *Comparison with previous attempts at immunization:* These have included the use of tuberculins and bacillary extracts, then bacilli killed by heat or by exposure to light. None of these substances have been found to exert protective effects. The so called "turtle bacilli" (a mixture of paratubercle bacilli and human tubercle bacilli) have no preventive or curative virtues, as German and American experiences have shown. Ferran, of Barcelona, has recently employed a series of vaccinations by scarification of the arm, using his *anti-alpha* vaccine, but his claims have not been proved. It is believed by Calmette that the rational use of his vaccine should notably reduce tuberculosis morbidity and mortality, especially in young children, and more indirectly also reduce adult tuberculosis. It is worthy of trial in army recruits from the colonies where tuberculosis is rare. When it is impossible to separate a tuberculous mother from her child, vaccination should be employed as soon as possible.—*Essais d'immunisation contre l'infection tuberculeuse, A. Calmette, C. Guérin, and Weill-Hallé, Presse Méd., July 2, 1924, no. 53, 553.*—(*A. P.*)

Apparatus for Disinfection of Tuberculous Sputum.—A nickel-plated apparatus is described which is coincidently used as cuspidor and disinfecting kettle, in which the sputum is boiled with soda. The mixture is brought to a boil by means of a spirit lamp, after which disinfection is complete.—*Über einen neuen Apparat zur Desinfektion des tuberckulösen Sputums im Privathaushalt, S. Ohmura, Ztschr. f. Tuberk., December, 1923, xxxix, 192.*—(*H. J. C.*)

Apparatus for Disinfection of Tuberculous Sputum.—A simple apparatus on the principle of the Koch steam-sterilizer is recommended. A kettle is divided into two chambers by means of a perforated plate. The upper chamber contains the sputum glass and the lower acts as a steam generating chamber and contains water which is heated by gas or alcohol. The cost of each disinfection is but a few cents.—*Zur Desinfektion tuberkulösen Auswurfs im Privathaushalt, Bofinger, Ztschr. f. Tuberk., December, 1923, xxxix, 190.*—(*H. J. C.*)

Prognostic Value of Blood Counts in Pulmonary Tuberculosis.—Individual blood examinations in pulmonary tuberculosis are of less value than serial examinations. In mild cases of pulmonary tuberculosis the hemoglobin and erythrocyte counts are normal, but they diminish with an increasing severity of the case, and return to normal values with improvement. Decreases are prognostically unfavorable, while increases of previously lowered values are favorable. There are cases, however, in which normal or increased values exist, in spite of poor general condition. This is explained as due to disturbances of the water balance, with coincident increase in blood concentration as a result of "autotuberculin" action; and this is of bad prognostic significance. Leucocyte counts are extremely variable. Normal values are found in mild cases, and with progression of the process the counts increase, the extent of the process being of less influence than the activity of the disease. Increased values are unfavorable prognostically. In very severe cases normal values again occur. A fall to normal in previously increased counts may be viewed as favorable, while a stationary high value or an increase of normal counts is unfavorable. On the other hand increased values in severe cases indicates a good reaction of the blood-forming organs and *vice versa.* The leucocyte counts allow no conclusions regarding cavity formation, normal or increased values being found. Increased counts also do not indicate the presence of mixed infection. High lymphocyte counts are a good sign, and low counts are unfavorable, the more so the higher the total leucocyte count. An increase of the lymphocytes at the expense of the neutrophiles indicates a favorable prognosis, but this is not essential for a good prognosis; a decrease, with coincident increase of neutrophiles, is unfavorable. High eosinophile values are a good sign, but normal counts do not exclude a good prognosis; also, a fall in already increased counts does not allow the deduction a bad prognosis. Absence of eosinophiles after repeated examinations is an unfavorable sign. No conclusions can be drawn from the mononuclear or transitional counts. The reac-

tion after the Pirquet test was of no special significance, but an increase in the lymphocytes and eosinophiles seems to be a favorable sign.—*Über die prognostische Bedeutung des Blutbildes bei der Lungentuberkulose im Verlauf einer Heilstättenkur, O. Eicke, Beitr. z. Klin. d. Tuberk., June, 1923, lvi, 95.*—(*H. J. C.*)

Prognosis of Pulmonary Tuberculosis Complicated by Pleurisy.— A series of 320 cases developed pleuritis during the course of their tuberculosis. The results of their treatment are compared with that of other cases, as is also ability to work. It is shown that the prognosis of a pulmonary case with complicating pleurisy is worse than that of pulmonary tuberculosis without pleurisy. The mortality of the pleurisy cases was decidedly greater in the first three years after discharge, and a smaller percentage remained alive after 9 years. Further, 128 cases were followed up that had had pleurisy during sanatorium residence, and they were found to have a less favorable course with regard to temperature, positive sputum, weight and stethoscopic examination. Only 3 cases showed persistent improvement in spite of the pleurisy. The view that a complicating pleurisy favorably influences the course of pulmonary tuberculosis is not justified.—*Über die Bedeutung der komplizierenden Rippenfellentzündung für die Prognose der Lungentuberkulose, O. V. Brandt, Beitr. z. Klin. d Tuberk., June, 1923, lv, 498.*—(*H. J. C.*)

Decline of Tuberculosis in Norwegian Town.—Kristianssand is a Norwegian coastal town, which had a population of about 12,000 some 50 years ago. The vital statistics for the period 1877 to 1921 may be studied during three intervals: (1) from 1877 to 1883, (2) 1884 to 1903 and (3) 1904 to 1921. The first, or pre-Koch period, shows the greatest figures in all classes; there were at least 200 cases of consumption of a fatal character (5 deaths per thousand annually). In the second period which represents the first chapter of tuberculosis prophylaxis there is an appreciable decline in the mortality from consumption. It soon reaches a level of 150 cases or 45 deaths a year. The third period represents the second chapter of tuberculosis prophylaxis and brings a further fall in the mortality (30 deaths per year). As the adolescents and adults in this period were children in the former period, we may assume that the declining mortality from consumption was due to the fact that the number of children infected with chronic, fatal tuberculosis was reduced during this period. The constant improvement in hygiene and prophylaxis was probably responsible for keeping down the number of acute primary infections among adults as well as among children. In Kritsianssand, about the eighties, the mortality from tuberculosis was 5 per 1000, whereas in 1920 it was only 1.7 per 1000.—*The Decline of Tuberculosis in a Norwegian Town, K. F. Andvord, Tubercle, August, 1924, v, 530.*—(*B. T. McM.*)

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